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New Pump and Treat Facility Annual Operations Report, October 2002 through September 2003, Test Area North Final Groundwater Remedy, Operable Unit 1-07B

Idaho Completion Project

Bechtel BWXT Idaho, LLC

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Idaho Completion Project
Idaho Falls, Idaho 83415

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Assistant Secretary for Environmental Management
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ABSTRACT

The New Pump and Treat Facility is a component of the groundwater remedy for a portion of a plume of dissolved volatile organic compounds in the Snake River Plain Aquifer beneath Test Area North, which is a facility located at the Idaho National Engineering and Environmental Laboratory. This report documents New Pump and Treat Facility operations during fiscal year 2003 (October 1, 2002, through September 30, 2003). The New Pump and Treat Facility began routine operations on October 1, 2001, and continued operating through the end of fiscal year 2003. The New Pump and Treat Facility consists of three extraction wells, one injection well, two air strippers, and ancillary equipment such as piping and monitoring equipment. Contaminated groundwater is pumped from the aquifer using one or more extraction wells, processed by air stripping to remove volatile organic compounds, and then injected back into the aquifer. During fiscal year 2003, the New Pump and Treat Facility met all operational goals. It was operational more than 98% of the time, the extraction flow rate was within prescribed limits during all operation periods, effluent concentration limits were met, and air discharge limits were not exceeded. Monitoring data show that influent contaminant concentrations have declined from 680 to 100 μg/L during the past two years of operation.

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ACRONYMS

COC	contaminant of concern
DCE	dichloroethene
FY	fiscal year
gpm	gallons per minute
INEEL	Idaho National Engineering and Environmental Laboratory
ISB	in situ bioremediation
MCL	maximum contaminant level
NPTF	New Pump and Treat Facility
O&M	operations and maintenance
PCE	tetrachloroethene
SP	sampling point
TAN	Test Area North
TCE	trichloroethene
VC	vinyl chloride
VOC	volatile organic compound

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1. INTRODUCTION

This report documents fiscal year (FY) 2003 operations of the New Pump and Treat Facility (NPTF), which is operated as part of the Test Area North (TAN) Operable Unit 1-07B groundwater remedy at the Idaho National Engineering and Environmental Laboratory (INEEL), as described in the *Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 1995). Although this record of decision was amended in September 2001 (DOE-ID 2001), the pump and treat portion of the remedy was not affected by the modification. The NPTF is operated in accordance with the *New Pump and Treat Facility Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2003a) and the *New Pump and Treat Facility Operations and Maintenance Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2003b). Associated sampling of groundwater-monitoring wells in the vicinity is described in the *Sampling and Analysis Plan for the New Pump and Treat Facility Performance Monitoring Test Area North, Operable Unit 1-07B* (INEEL 2001). This annual report provides information on the second year of NPTF operation, compliance, and performance, as required by these documents.

The specific meanings of three terms used in this document are listed below:

- *Operations* refers to the routine activities associated with maintaining and running the NPTF.
- *Compliance* refers to the NPTF being operated within air- and water-effluent discharge limits.
- *Performance* refers to the function of the NPTF relative to requirements to clean up the medial zone of the groundwater plume and to capture the contaminated groundwater that emanates from the "hot spot" near former Injection Well TSF-05.

1.1 Overview of the New Pump and Treat Facility

The NPTF is a pump and treat system that is operated to clean up the medial zone of the groundwater plume and prevent the contaminated groundwater from migrating further downgradient (see Figure 1-1). Major components of the pump and treat system include (a) a network of groundwater extraction wells (i.e., TAN-38, -39, and -40), (b) an aboveground treatment system that uses two air strippers to reduce concentrations of volatile organic compounds (VOCs) to less than maximum contaminant levels (MCLs), and (c) an injection well (i.e., TAN-53A) used to inject treated water back into the aquifer. Locations of the NPTF and surrounding wells are shown in Figure 1-1.

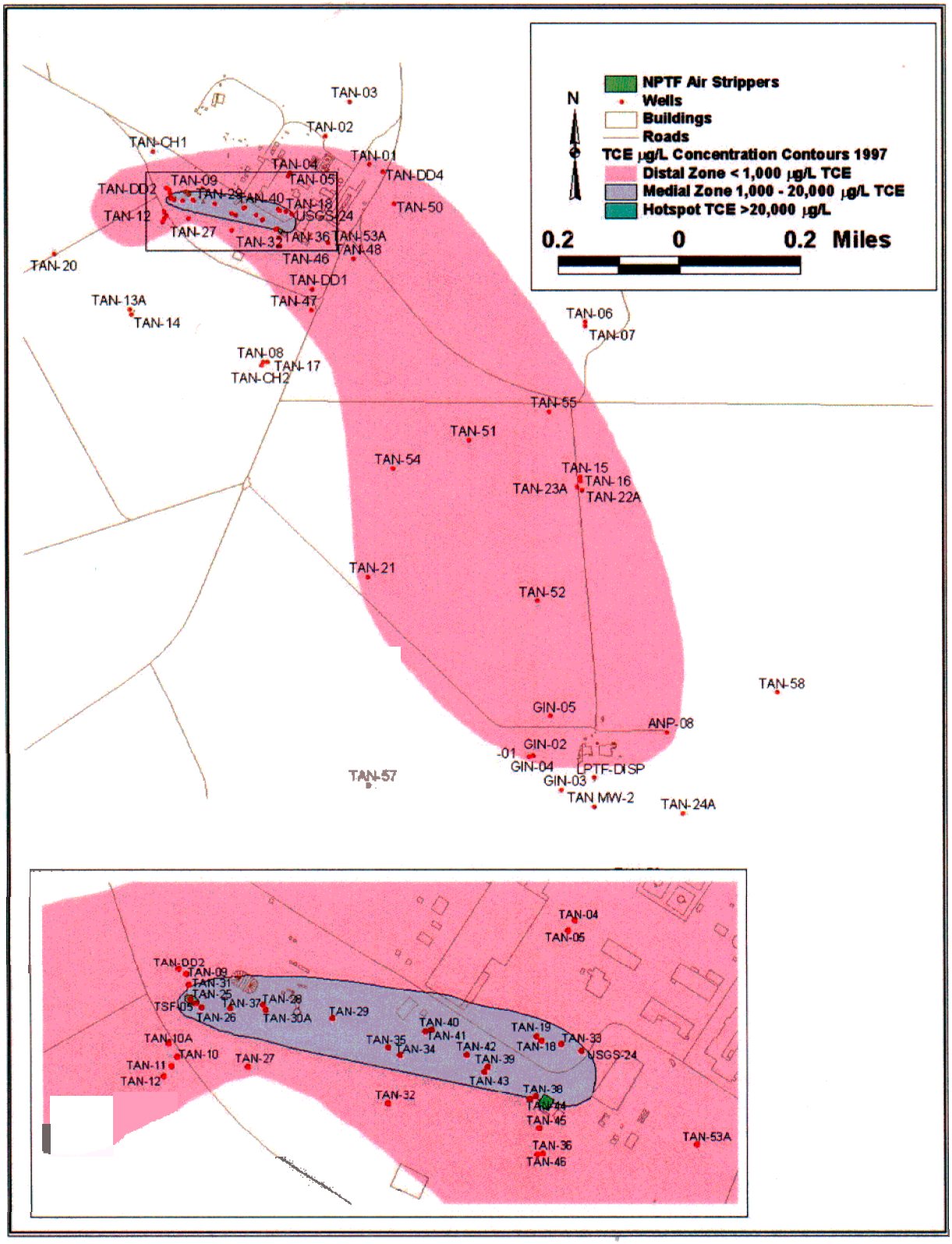

Figure 1-1. Medial zone of the contaminated groundwater plume at Test Area North.

2. SUMMARY OF OPERATIONS

The NPTF began routine operations on October 1, 2001, and it has continued operating through September 30, 2003. During routine NPTF operations, contaminated groundwater is processed at a flow rate of 120 to 250 gallons per minute (gpm). The actual flow rate of the NPTF during the reporting period is summarized in Figure 2-1. The height of the area for each well corresponds to the extraction rate for that well, and the total height of the areas corresponds to the total flow rate. During the operating period, the NPTF operated 98% of the time, which exceeded the uptime goal of 90%. Table 2-1 summarizes NPTF operations for each month in FY 2003.

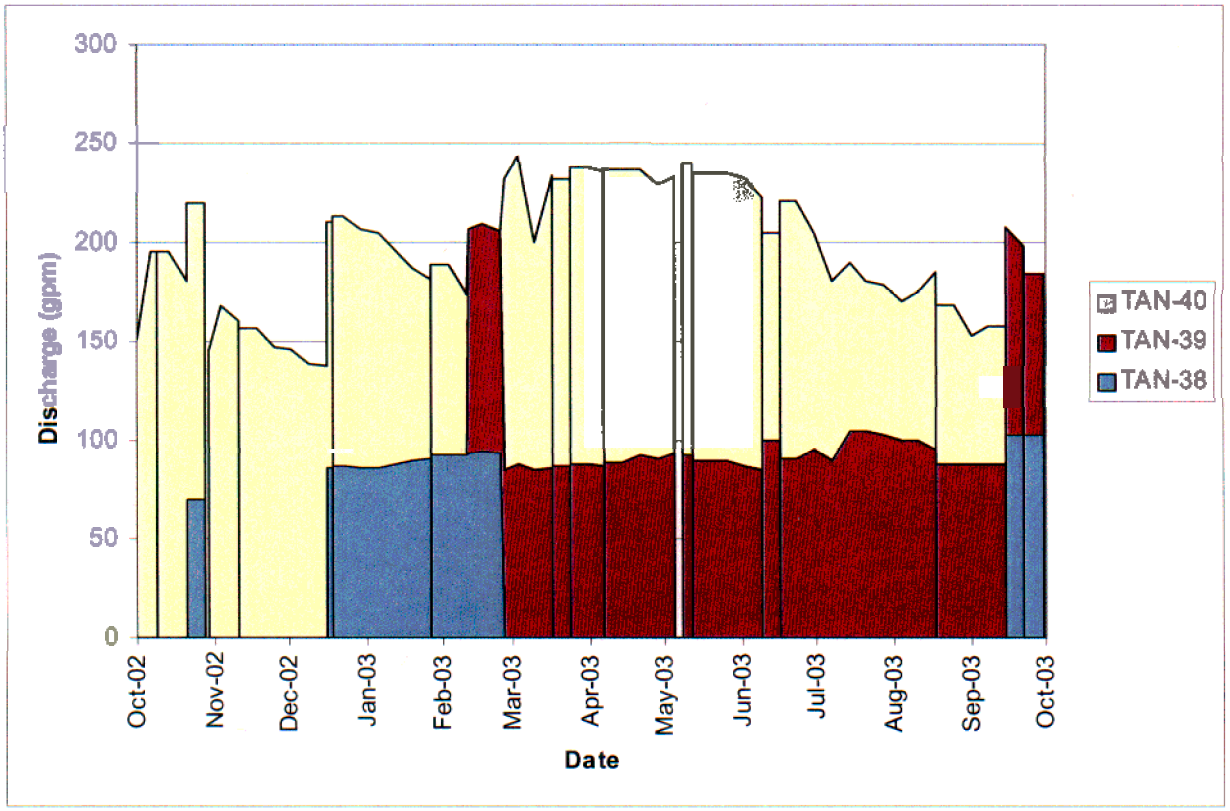

Figure 2-1. Flow rate from the New Pump and Treat Facility extraction wells.

In addition to processing contaminated groundwater taken from extraction wells, the NPTF processed purge water generated from groundwater sampling and well-drilling activities. All purge water was managed in accordance with applicable procedures. Appendix A summarizes the purge water processed through the NPTF during the reporting period.

Table 2-1. New Pump and Treat Facility operations summary for FY 2003.

Period	Operating Hours		Gallons Processed	Monthly Uptime (%)	Rolling Average (12 months) Uptime (%)
	Possible	Total			
Oct	672	672	7,899,780	100	98
Nov	504	446	6,299,117	88.43	97
Dec	840	840	7,210,058	99.98	98
Jan	840	840	12,207,546	100	98
Feb	672	662	9,382,414	98.55	98
Mar	672	662	9,054,403	98.51	98.53
Apr	672	671	9,372,020	99.80	99
May	840	774	10,712,417	92.15	98.12
Jun	648	636	6,957,825	98.16	98
Jul	672	672	7,337,727	100	98
Aug	840	838	7,057,043	99.76	98
Sep	840	838	9,649,928	99.72	98
Total FY-03	8,712	8,550	103,140,278	—	98
Total FY-02	8,736	8,568	119,259,910	—	98
Grand Total	17,448	17,118	222,400,188	—	98

2.1 Inspections, Operational Issues, and Corrective Maintenance

The inspection requirements for the NPTF are described in Subsection 3.3 of the NPTF operations and maintenance (O&M) plan (DOE-ID 2003b). Inspections were performed daily throughout FY 2003 in accordance with applicable procedures.

The NPTF operated continuously throughout the reporting period, except for two unplanned and 12 planned shutdowns. Unplanned shutdowns resulted from a faulty well transducer and a spurious high-level alarm in the air stripper 311 sump. Recovery from the unplanned shutdowns was accomplished by replacing the faulty transducer and resetting the system. No other corrective maintenance was done during the reporting period. Planned shutdowns occurred in order to maintain software, replace re-injection piping, complete drawdown tests, and conduct annual facility testing (for example, flowmeter tests and tank water level meter tests). Appendix B provides additional details about facility operations.

3. COMPLIANCE MONITORING EVALUATION

Compliance monitoring is completed to ensure that the NPTF effluents meet water- and air-discharge limits and to track influent contaminant concentrations. During the reporting period, contaminant concentrations in water and air effluents were below discharge limits.

3.1 Influent Concentrations

The requirements for monitoring the concentration of contaminants in NPTF influent are in Table 4-1 of the NPTF O&M plan (DOE-ID 2003b). The VOC and radionuclide concentrations measured in samples collected from the NPTF influent are shown in Figure 3-1. These data are tabulated in Appendix C. Concentrations of VOCs in NPTF influent samples generally showed an overall trend of declining concentrations. Radionuclide data are tabulated in Appendix C but were not plotted. Throughout the fiscal year, Sr-90 and H-3 were at or below detection limits, and no trend was discernible. The actual completeness for NPTF influent samples was 100%.

3.2 Water Effluent Emissions

The VOC and radionuclide concentrations in water discharged from the NPTF must be below MCLs.[a] Furthermore, the cumulative carcinogenic risk due to VOCs must be less than 1×10^{-5}.[b] Tabulated contaminant concentration data for the NPTF effluent are in Appendix C. The NPTF effluent met water effluent discharge limits throughout FY 2003. The concentration of trichloroethene (TCE) and all other VOCs in NPTF effluent was below the method detection limit. As indicated in Appendix C of the NPTF O&M Plan (DOE-ID 2003b), contaminant concentrations less than the applicable method detection limit are not included in the cumulative risk calculation. As a result, the cumulative carcinogenic risk of NPTF effluent is zero for all samples collected. The radionuclide contaminants of concern (COCs) in NPTF effluent were also below the applicable MCLs (see Appendix C). Hence, the water effluent was within all of the limits during the reporting period.

3.3 Air Emissions

Limits for VOCs discharged from the NPTF to the atmosphere are described in the *New Pump and Treat Facility Remedial Design Test Area North Operable Unit 1-07B* (DOE-ID 2000). Sample collection, analysis, and validation requirements for monitoring air effluent are described in Table 4-1 of the NPTF O&M plan (DOE-ID 2003b).

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a. Karl J. Dreher, Idaho Department of Water Resources, Letter to C. Stephen Allred, Idaho Department of Environmental Quality, April 3, 2001, "Injection of Amendments and Treated Ground Water into the Eastern Snake Plain Aquifer ("ESPA") in Support of Remedial Actions at Test Area North ('TAN') OU 1-07B, INEEL."

b. Brian R. Monson, Idaho Department of Environmental Quality, Letter to Dave Wessman, U.S. Department of Energy Idaho Operations Office, February 5, 2001, "August 8, 2001, and January 12, 2001, Request of a 'No Longer Contained-In' Determination for Operable Unit 1-07B Remediated Water at the INEEL, EPA ID No. ID4890008952."

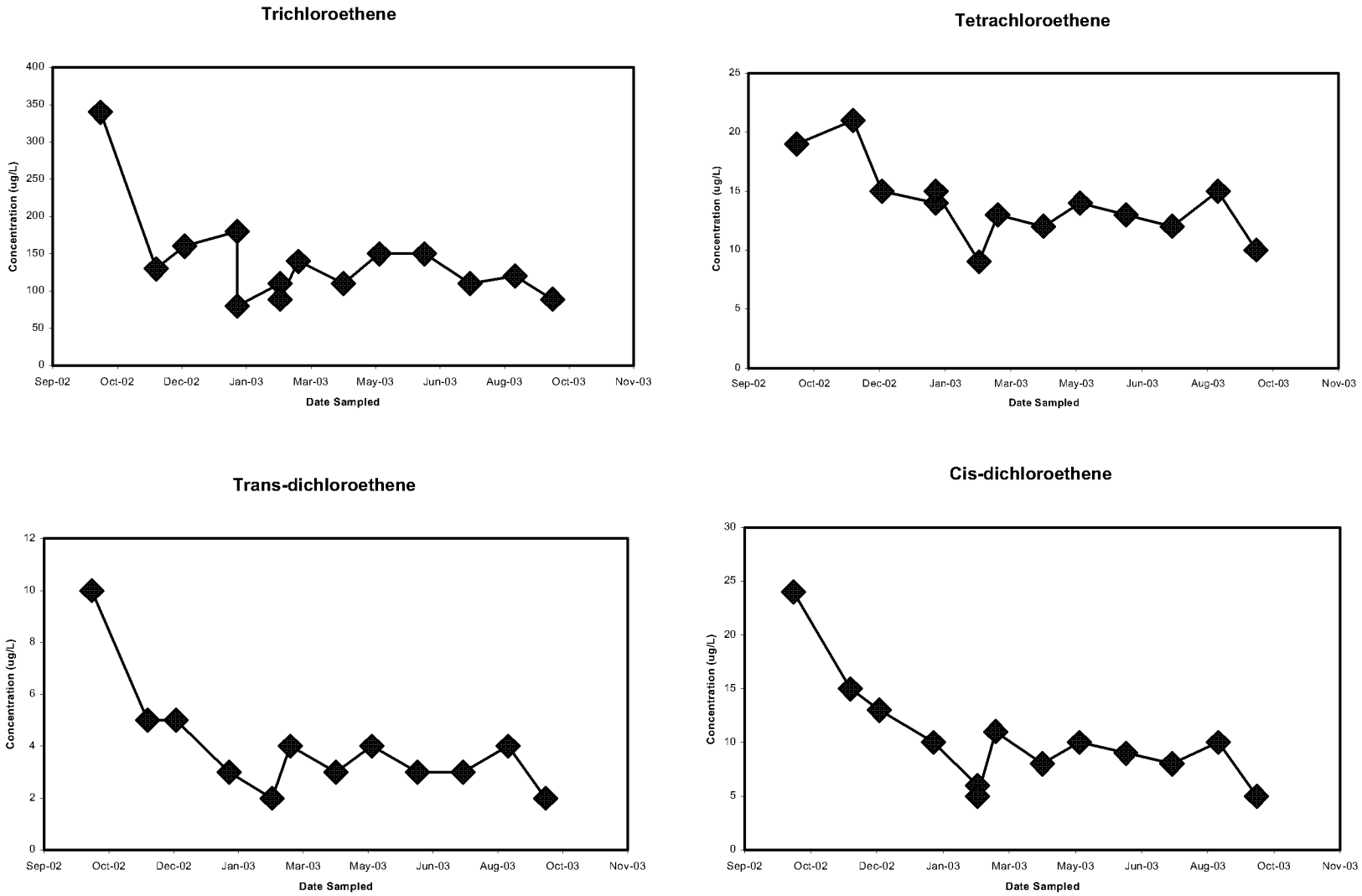

Figure 3-1. Contaminant-of-concern concentrations in New Pump and Treat Facility influent.

Concentrations of VOC COCs in NPTF air effluent declined throughout the reporting period (see Figure 3-2). Mass flow rates of VOCs discharged from the NPTF air strippers to the atmosphere were below the respective air discharge limits throughout the reporting period (see Figure 3-2). The VOC emissions from NPTF air strippers to the atmosphere were calculated in two ways. The first approach was to calculate the VOC mass flow rate using VOC concentrations measured in air stripper off-gas samples (the air effluent approach). The second approach was to assume that all VOCs dissolved in NPTF influent were discharged to the atmosphere and to calculate the VOC mass influx to the NPTF (the water influent approach). Comparison of results from two independent calculation methods provides a check on the calculations.

3.3.1 Air Effluent Approach

The mass of VOCs discharged to the atmosphere from the air strippers was calculated as the product of measured VOC concentrations in samples collected from air stripper off-gas sample points and the volumetric flow rate of air discharged from the air strippers. The mass flow rates of TCE, tetrachloroethene (PCE), *cis*-1,2-dichloroethene (DCE), and vinyl chloride (VC) were below their respective discharge limits (see Figure 3-2). VC was not detected in any gaseous samples and is not included in Figure 3-2.

3.3.2 Water Influent Approach

If the air strippers in the NPTF were 100% efficient at transferring VOCs from water to air, then the mass flow rate of VOCs discharged to the atmosphere would equal the mass flow rate of VOCs dissolved in water entering the NPTF. Because the actual air stripper removal efficiency is somewhat less than 100%, the actual mass flow rate discharged to the atmosphere is less than the influent mass flow rate. Therefore, the influent VOC mass flow rate is an upper bound on the VOC mass flow rate discharged to the atmosphere. The VOC emissions from the NPTF to the atmosphere were calculated as the product of VOC concentrations measured at the influent sample point and the average monthly combined process flow rate shown in Figure 3-2.

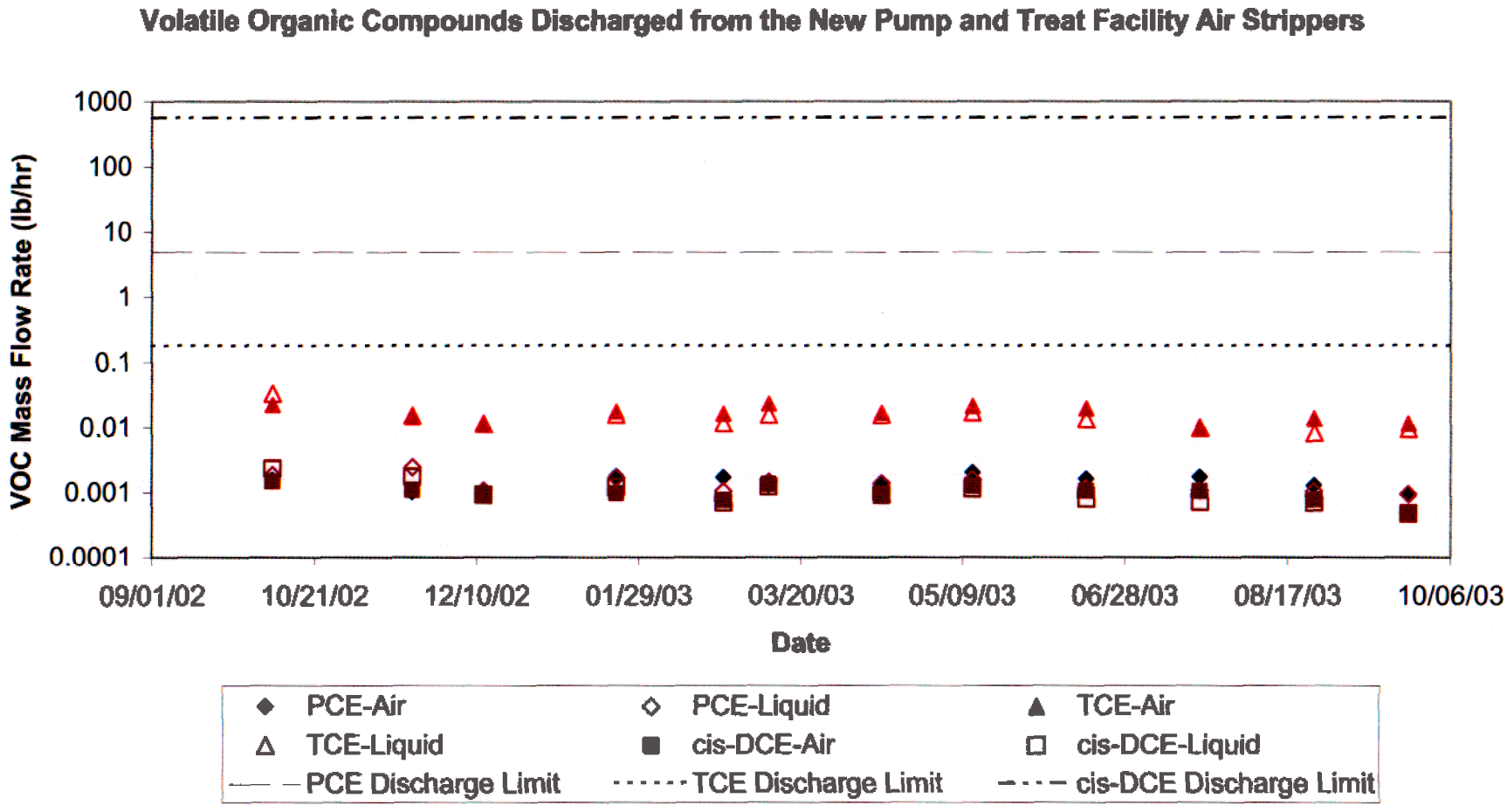

Figure 3-2. Mass flow rate of volatile organic compounds discharged to the atmosphere by the New Pump and Treat Facility.

4. PERFORMANCE MONITORING EVALUATION

This section addresses the effectiveness of extraction wells at generating a capture zone that encompasses the medial zone, temporal trends in COC concentrations at the upgradient end of the medial zone, and baseline facility effectiveness. Baseline facility effectiveness includes the effect of groundwater remedies on COC concentrations throughout the medial zone.

4.1 Plume Capture

This subsection evaluates the width of the capture zone generated by operating extraction wells TAN-38, -39, and -40. Performance requirements, both for generating the capture zone and for conducting tests to document the width of the capture zone, are described in Subsections 4.2 and 4.2.1 of the NPTF O&M plan (DOE-ID 2003b). As indicated in Table 2-3 of the NPTF O&M plan, water level data from wells TAN-19, -32, -33, and -36 were evaluated to determine if sufficient drawdown continues to be achieved.

Water level data collected during unplanned or planned shutdowns and subsequent startups were used to calculate the amount of drawdown at selected monitoring wells due to operating extraction wells. This analysis showed that the capture zone width met the requirement during all three drawdown tests conducted during the reporting period. Wells included in this analysis (TAN-19, -32, -33, and -36) are located near the edge of the minimum required capture zone (see Figure 4-1). The hydraulic response of these wells to changes in extraction flow rate due to starting extraction well pumps was interpreted to determine whether drawdown caused by operating the extraction wells occurred at these monitoring wells. Based on flow modeling conducted previously, measurable drawdown in these wells would indicate that the capture zone was at least as wide as required (INEEL 2002a, 2002b).

Results of drawdown testing are summarized in Table 4-1. Water levels responded from 0.025 to 0.07 ft when extraction well pumps were turned off or on. The response of water levels in these four wells to extraction well shutdown indicates that extraction wells cause drawdown at these monitoring wells and, thus, that the capture zone extends at least as far as these wells. Therefore, it can be concluded that the extraction wells generate a capture zone that meets the requirement that the zone extend at least 225 ft from the medial zone centerline.

Table 4-1. Drawdown measured at selected wells.

NPTF Shutdown Date and Time	NPTF Startup Date and Time	Drawdown Observed during Startup (ft)				Poststartup Extraction Rate (gpm)		
		TAN-19	TAN-32	TAN-33	TAN-36	TAN-38	TAN-39	TAN-40
03/19/03, 1000	03/19/03, 1600	0.025	0.05	0.04	0.02	0	85	146
05/09/03, 1000	05/12/03, 1102	0.05	0.05	0.06	0.016	0	92	153
09/24/03, 1300	09/24/03, 1600	0.06	0.05	0.07	0.06	103	81	0

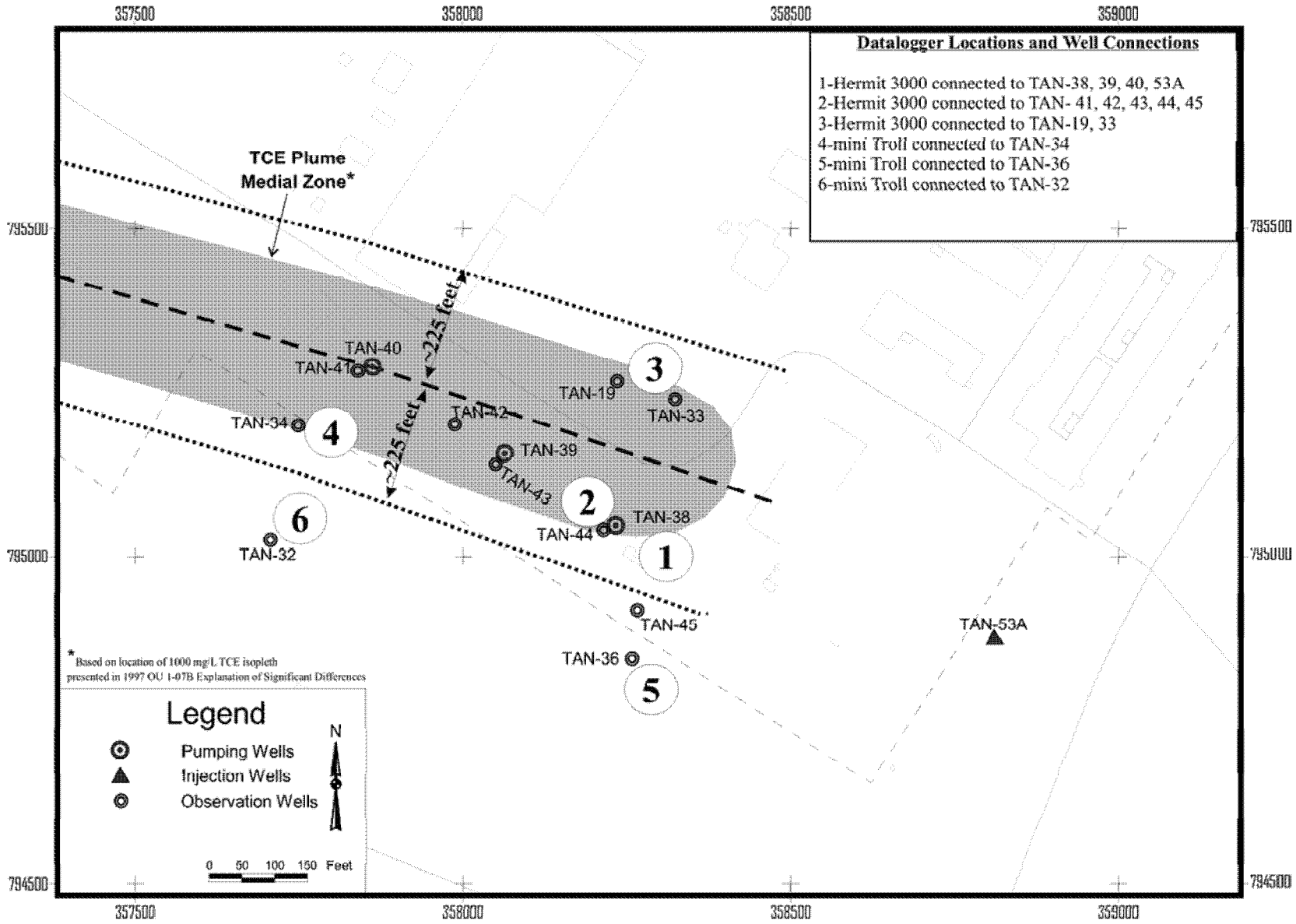

Figure 4-1. Medial zone capture zone.

4.2 Upgradient Source Control

Upgradient source control refers to monitoring the concentration of COCs upgradient of the extraction well network. The NPTF remedial action work plan (DOE-ID 2003a) describes the required monitoring. The purpose of upgradient monitoring is primarily to provide a warning that groundwater with higher-than-anticipated contaminant concentrations is moving toward the extraction wells. Operational changes can then be made before this groundwater reaches the extraction well network.

The VOC and strontium-90 data for well TAN-29 are shown in Figure 4-2 and are tabulated in Appendix D. As is shown in the figure, the concentration of VOCs in well TAN-29 showed an increasing trend during FY 2003. This increasing concentration is likely due to rebound after pumping stopped at TAN-29 in December 2000. On the other hand, the concentration of strontium-90 remained relatively constant during the reporting period.

The major objective of ongoing in situ bioremediation (ISB) operations is to cut off flux of contaminants from the hot spot to downgradient wells. Once this ISB objective is achieved, the concentration of VOCs in well TAN-29 is expected to decrease. Additionally, concentrations of VOCs in well TAN-29 remain slightly below what they were before the hot spot remedial action was initiated (e.g., TCE ranged from 1,000 to 1,600 µg/L before ISB was implemented).

Based on the trends illustrated in Figure 4-2, there is no evidence that a body of water that has substantially higher contaminant concentrations than has been previously treated is moving toward the NPTF extraction wells. Hence, NPTF effluent limits will not be exceeded and no changes in NPTF operations are needed.

4.3 Baseline Facility Performance

Baseline facility performance refers to the effect of operating the NPTF on groundwater quality in selected wells near the NPTF and on the hydraulic performance of extraction and injection wells. Agency-approved controlling documents currently do not require water quality to be monitored in wells near the NPTF to assess NPTF performance. Nevertheless, this was done as a good operational practice. Monitoring was performed in accordance with the NPTF sampling and analysis plan (INEEL 2001). Wells to be sampled were TAN-29, -33, -36, -43, and -44. Quarterly sampling is specified.

The wells and parameters indicated above were sampled at the required frequency during this reporting period. The 90% completeness goal (INEEL 2001) was met for all analytes. Water quality monitoring data are tabulated in Appendix D. Data from these wells will be used during periodic reviews to assess the need for NPTF operations.

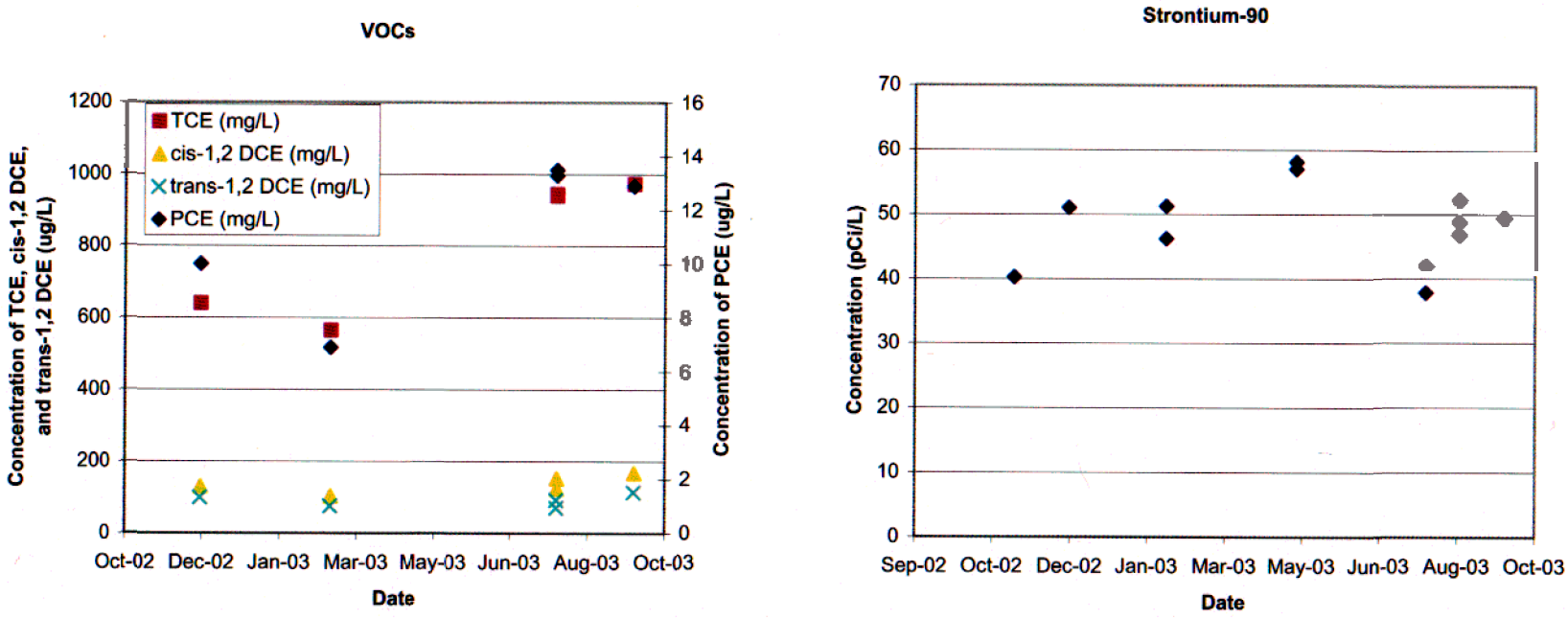

Figure 4-2. Volatile organic compound and strontium-90 concentrations at well TAN-29.

5. SUMMARY

This section summarizes the findings of previous sections of this report.

Operations:

- The NPTF operated within established limits throughout FY 2003. These limits include operational uptime, extraction well flow rate, and water and air discharge limits.
- Purge water processed by the NPTF during FY 2003 was handled in accordance with established procedures.
- Routine inspections were performed as required.
- The 90% completeness goal for performance-sample collection and analysis was met. The 100% completeness goal for compliance-sample collection was met.
- The NPTF operational uptime was greater than 98%, which met the uptime goal of at least 90%.
- COC concentrations in NPTF influent declined during FY 2003 and are approximately 10% of the design concentrations.

Plume capture:

- Water levels in several monitoring wells responded to extraction well startup (that is, pumping from extraction wells caused drawdown at these monitoring wells). Drawdown in wells TAN-19, -32, -33, and -36 indicates that the required plume capture width is achieved.

Upgradient source control:

- Concentrations of VOCs at TAN-29 increased during FY 2003. This trend is likely a result of contaminant migration from the hot spot of the plume. This increase is not expected to affect NPTF operations, and no changes to the operating strategy are needed. Furthermore, as continued ISB operations successfully stop contaminant flux from the hot spot, contaminant concentrations in TAN-29 are expected to decrease.
- Concentrations of radionuclides at TAN-29 remained steady in FY 2003.

6. REFERENCES

DOE-ID, 1995, *Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action,* DOE/ID-10139, Revision 0, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, August 1995.

DOE-ID, 2000, *New Pump and Treat Facility Remedial Design Test Area North Operable Unit 1-07B*, DOE/ID-10661, Revision 1, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, March 2000.

DOE-ID, 2001, *Record of Decision Amendment for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action*, DOE/ID-10139 Amendment, Revision 0, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, September 2001.

DOE-ID, 2003a, *New Pump and Treat Facility Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B*, DOE/ID-10679, Revision 1, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, September 2003.

DOE-ID, 2003b, *New Pump and Treat Facility Operations and Maintenance Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B*, DOE/ID-10684, Revision 3, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, September 2003.

INEEL, 2001, *Sampling and Analysis Plan for the New Pump and Treat Facility Performance Monitoring Test Area North, Operable Unit 1-07B*, INEEL/EXT-01-01468, Revision 0, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, December 2001.

INEEL, 2002a, *Performance and Compliance Monitoring Strategy for the New Pump and Treat Facility, Test Area North, Operable Unit 1-07B*, INEEL/EXT-02-00662, Revision 0, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, October 2002.

INEEL, 2002b, *Development and Calibration of a Steady-State Groundwater Flow Model for Capture Zone Evaluation, New Pump and Treat Facility, Test Area North, Operable Unit 1-07,* INEEL/EXT-02-00661, Revision 0, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho, October 2002.

Appendix A

Purge Water Management at the New Pump and Treat Facility, FY 2003

Appendix A

Purge Water Management at the New Pump and Treat Facility, FY 2003

This appendix contains a summary of purge water processed through the New Pump and Treat Facility during FY 2003. Table A-1 shows the month in which purge water was processed, the source of the purge water, the processing ratio, and the total volume of purge water processed during each month.

Table A-1. Purge water management.

Sampling Event Date	Wells Sampled (well identifier)	Processing[a] Ratio	Total Volume of Purge Water (gal)
10/2002	TAN-09, -18, GIN-2, -4	N/A	288
	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	315
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	547
11/2002	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	515
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	174
12/2002	TAN-33, -36, -43, -44	N/A	125
	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	348
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	225
01/2003	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	360
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	284
02/2003	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	702
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	226
03/2003	TAN-21, -40	N/A	93
	TAN-D2, -10A, -26, -27, -28, -29, -30A, -33, -36, -43, -44	100:1	540
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	335

Table A-1. (continued).

Sampling Event Date	Wells Sampled (well identifier)	Processing[a] Ratio	Total Volume of Purge Water (gal)
04/2003	ANP-08	N/A	40
	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	334
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	369
05/2003	ANP-08	N/A	20
	TAN-D2, -10A, -26, -27, -28, -29, -30A	100:1	372
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C	500:1	223
06/2003	ANP-08	N/A	32
	TAN-D2, -10A, -26, -27, -28, -29, -30A, -1860, -1861	100:1	8559
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C, -1859	500:1	655
07/2003	TAN-D2, -10A, -26, -27, -28, -29, -30A, -1860, -1861	100:1	1790
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C, -1859	500:1	1325
08/2003	ANP-08, GIN-1, TAN-16, -51, -55	N/A	720
	TAN-D2, -10A, -26, -27, -28, -29, -30A, -1860, -1861	100:1	7687
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C, -1859	500:1	555
09/2003	TAN-55	N/A	525
	TAN-D2, -10A, -26, -27, -28, -29, -30A, -1860, -1861	100:1	1476
	TSF-05A & B; TAN-25, -31, -37A, -37B, -37C, -1859	500:1	162

a. The processing ratio is defined as the flow rate of the facility divided by the flow rate of the purge water being processed. Wells located outside of the hot spot area do not have a required processing ratio, and the ratio is indicated as N/A in the table.

Appendix B

Summary of FY 2003 New Pump and Treat Facility Operations

Appendix B

Summary of FY 2003 New Pump and Treat Facility Operations

The New Pump and Treat Facility (NPTF) operated continuously throughout the reporting period, except for instances of planned or unplanned shutdowns. Unplanned shutdowns were caused by power outages and spurious alarms. Planned shutdowns were performed to test or repair system components. Table B-1 contains a summary of all shutdowns, including any corrective actions taken and the amount of downtime caused by each shutdown.

Table B-1. Summary of New Pump and Treat Facility shutdowns during FY 2003.

Date	Issue	Corrective Action	Downtime (hours)
10/9/2002	Flowmeter FIT-318 was registering flows that were not in agreement with other flowmeters in the facility. The system was shut down for inspection and corrective action.	Slime on the paddle wheel was removed, and the flowmeter was placed back in service.	0.25
10/28/2002	The facility was shut down to complete the required semiannual drawdown test.	Drawdown test was completed.	58
11/11/2002	The facility was placed on standby to replace the influent sampling line (SP-1).	The sampling line was replaced, and the facility was re-started.	0.33
12/19/2002	The facility was placed on standby to test the emergency paging system and other process controls in preparation for the annual holiday work curtailment.	The facility is prepared for the work curtailment.	0.17
1/27/2003	The facility was shutdown to replace the carbon-steel piping in TAN-53A.	The carbon-steel piping in the re-injection well was replaced with stainless-steel piping.	9.75
3/17/2003	The facility was shut down to perform a required drawdown test.	The test was completed successfully, and the NPTF was re-started.	10
3/24/2003	Flowmeter FIT-318 was registering flows that were not in agreement with other flowmeters in the facility. The system was shut down for inspection and corrective action.	Slime on the paddle wheel was removed, and the flowmeter was placed back in service.	0.33

Table B-1. (continued).

Date	Issue	Corrective Action	Downtime (hours)
4/7/2003	During annual testing of the air stripper sump water level sensors, the system shut down as a result of a high-level alarm in the air stripper sump.	The facility was re-started. Test procedures were reviewed. No additional action is required.	1
5/5/2003	The electrical power system at Test Area North (TAN) was shut down to allow work on other TAN systems.	The facility was re-started once electrical power was available.	65.4
5/12/2003	The contact information in the NPTF autodialer was updated. In order to test the system, emergency shutdown was initiated to determine if the autodialer contacted the appropriate personnel.	The autodialer system performed as expected and the facility was re-started.	0.5
6/9/2003	Air stripper 311 suffered a spurious high-level alarm in the sump.	The system was re-started after verifying that the alarm had been spurious.	0.25
6/16/2003	The water level transducer located in well TAN-53A (NPTF re-injection well) failed. This failure caused an emergency shutdown of the NPTF.	The transducer was replaced, and the system was re-started.	35.7
8/18/2003	The facility was shut down to update the control system software and to modify the 'Q' factor for the flowmeter.	The system was re-strarted and operated normally.	2
9/22/2003	The facility was shut down to perform the required semiannual drawdown test.	The system was re-started as needed to complete the test.	2.33
		Total	186

Appendix C

Water Quality Data for New Pump and Treat Facility Influent, Effluent, and Air Emissions, FY 2003

Appendix C

Water Quality Data for New Pump and Treat Facility Influent, Effluent, and Air Emissions, FY 2003

Volatile organic compound and radionuclide concentrations measured in samples collected from the New Pump and Treat Facility influent sampling point, SP-1, and effluent sampling points, SP-2, SP-7, and SP-8, are tabulated in Tables C-1 through C-9.

Table C-1. New Pump and Treat Facility volatile organic compound influent data (SP-1).

Sample Identifier	Date	Time	PCE (µg/L)	PCE Flag	TCE (µg/L)	TCE Flag	*trans*-DCE (µg/L)	*trans*-DCE Flag	*cis*-DCE (µg/L)	*cis*-DCE Flag	VC (µg/L)	VC Flag
NPT00001VA	10/08/02	1000	19		340	D	10		24		1	U
NPT00701AZ	11/20/02	845	21	J	130	J	5	J	15	J	1	UJ
NPT01401AV	12/12/02	1046	15		160	J	5		13		1	U
NPT02101AV	01/22/03	1050	14		180	D	3		10		1	U
NPT02102AV	01/22/03	1050	15		80	D	3		10		1	U
NPT02701AV	02/24/03	1145	9		110	D	2		6		1	U
NPT02702AV	02/24/03	1145	9		89	D	2		5		1	U
NPT03301AZ	03/10/03	1000	13	J	140	D	4		11		1	U
NPT03901AV	04/14/03	1000	12	J	110		3		8		1	U
NPT03902AV	04/14/03	1000	12	J	160		3		8		1	U
NPT04501AZ	05/12/03	1230	14	J	150		4		10		1	U
NPT05101AZ	06/16/03	1000	13		150		3		9		1	U
NPT05701AV	07/21/03	1030	12		110		3		8		1	U
NPT05702AV	07/21/03	1030	12		110		3		8		1	U
NPT06301AZ	08/25/03	1000	15		120	D	4		10		1	U
NPT06901AZ	09/23/03	1030	10		100		2		5		1	U

a. Duplicates were averaged for clearer representation of the results.
b. Total 1,2-DCE analyzed; concentration = 49 µg/L. Tablulated concentrations are estimated. Individual isomers were not analyzed in this sample.

DCE = dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride

D = diluted sample
J = estimated value
U = nondetect (half the detection limit is graphed)

Table C-2. New Pump and Treat Facility tritium influent data (SP-1).

			H-3		
Sample Identifier	Date	Time	(pCi/L)	+/-	Minimum Detectable Activity
NPT00001R8	10/08/02	1000	2,800	192	333
NPT00701R8	11/20/02	845	2,320	174	336
NPT01401R8	12/12/02	1045	2,610	116	260
NPT02101R8	01/22/03	1050	2,590	142	364
NPT02102R8	01/22/03	1050	2,210	142	378
NPT02702R8	02/24/03	1145	2,330	124	309
NPT02701R8	02/24/03	1145	2,630	162	424
NPT03301R8	03/10/03	1000	2,170	123	297
NPT03901R8	04/14/03	1000	2,060	110	204
NPT03902R8	04/14/03	1000	2,080	112	208
NPT04501R8	05/12/03	1230	2,270	121	285
NPT05101R8	06/16/03	1000	1,960	177	394
NPT05701R8	07/21/03	1030	2,140	163	313
NPT05702R8	07/21/03	1030	2,160	170	331
NPT06301R8	08/25/03	1000	2,200	190	397
NPT06901R8	09/23/03	1030	2,560	177	328

Table C-3. New Pump and Treat Facility strontium-90 influent data (SP-1).

			Sr-90			
Sample Identifier	Date	Time	(pCi/L)	Flag	+/-	Minimum Detectable Activity
NPT00001RB	10/08/02	1000	0.0136	U	0.151	0.756
NPT00701RB	11/20/02	845	0.237	UJ	0.108	0.424
NPT01401RB	12/12/02	1045	0.179	U	0.109	0.451
NPT02101RB	01/22/03	1050	0.205	U	0.197	0.650
NPT02102RB	01/22/03	1050	0.0806	U	0.177	0.595
NPT02702RB	02/24/03	1145	-0.110	U	0.109	0.372
NPT02701RB	02/24/03	1145	0.189	U	0.110	0.356
NPT03301RB	03/10/03	1000	0.342	UJ	0.135	0.486
NPT03901RB	04/14/03	1000	0.124	U	0.129	0.574
NPT03902RB	04/14/03	1000	0.0827	U	0.116	0.523
NPT04501RB	05/12/03	1230	0.114	U	0.166	0.730
NPT05101RB	06/16/03	1000	0.155	U	0.089	0.329
NPT05701RB	7/21/03	1030	0.132	U	0.125	0.567
NPT05702RB	7/21/03	1030	0.114	U	0.119	0.546
NPT06301RB	8/25/03	1000	-0.0873	U	0.136	0.549
NPT06901RB	9/23/03	1030	0.516		0.146	0.464

J = estimated value
U = nondetect

Table C-4. New Pump and Treat Facility gross alpha influent (SP-1) and effluent (SP-2, SP-7, and SP-8) data.

Sample Identifier	Sample Collection Date	Sample Collection Time	Sample Location	Alpha Count Date	Total Background Counts	Background (cpm)	Total Source Counts	Source (cpm)	Efficiency Factor (cpm/dpm)	Total Sample Counts	Sample (cpm)	Net Sample Activity or Net Count Rate (cpm)	Gross Alpha (pCi/L)	Sample Activity (pCi)
NPT00101AB	8-Oct-02	1000	SP-7	5-Nov-02	12	0.24	256,074	5,121.48	0.30	17	0.34	0.1 +/- 0.22	5.03 +/- 10.84	0.005
NPT00102AB	8-Oct-02	1000	SP-7	5-Nov-02	12	0.24	256,074	5,121.48	0.30	18	0.36	0.12 +/- 0.22	6.04 +/- 11.02	0.006
NPTG5001AB	18-Sep-02	845	SP-7	5-Nov-02	12	0.24	256,074	5,121.48	0.30	22	0.44	0.2 +/- 0.23	10.06 +/- 11.74	0.010
NPTG4902AB	18-Sep-02	845	SP-1	5-Nov-02	12	0.24	256,074	5,121.48	0.30	5	0.1	-0.14 +/- 0.16	-7.04 +/- 8.30	-0.007
NPT00001AB	8-Oct-02	1000	SP-1	5-Nov-02	12	0.24	256,074	5,121.48	0.30	8	0.16	-0.08 +/- 0.18	-4.03 +/- 9.00	-0.004
NPT00201AB	8-Oct-02	1000	SP-8	5-Nov-02	12	0.24	256,074	5,121.48	0.30	7	0.14	-0.1 +/- 0.17	-5.03 +/- 8.77	-0.005
NPT00801AB	20-Nov-02	845	SP-7	20-Nov-02	10	0.2	253,949	5,078.98	0.30	17	0.34	0.14 +/- 0.21	7.10 +/- 10.55	0.007
NPT00802AB	20-Nov-02	845	SP-7	20-Nov-02	10	0.2	253,949	5,078.98	0.30	16	0.32	0.12 +/- 0.20	6.09 +/- 10.35	0.006
NPT00901AB	20-Nov-02	845	SP-8	20-Nov-02	10	0.2	253,949	5,078.98	0.30	9	0.18	-0.02 +/- 0.17	-1.01 +/- 8.85	-0.001
NPT00701AB	20-Nov-02	845	SP-1	20-Nov-02	10	0.2	253,949	5,078.98	0.30	8	0.16	-0.04 +/- 0.17	-2.03 +/- 8.61	-0.002
NPT01401AB	12-Dec-02	1045	SP-1	12-Dec-02	10	0.2	253,108	5,062.16	0.29	47	0.94	0.74 +/- 0.30	37.67 +/- 15.37	0.038
NPT01501AB	12-Dec-02	1045	SP-7	12-Dec-02	10	0.2	253,108	5,062.16	0.29	50	1	0.8 +/- 0.31	40.73 +/- 15.77	0.041
NPT016101AB	12-Dec-02	1046	SP-8	17-Dec-02	6	0.12	255,671	5,113.42	0.30	4	0.08	-0.04 +/- 0.13	-2.02 +/- 6.37	-0.002
NPT01602AB	12-Dec-02	1046	SP-8	17-Dec-02	6	0.12	255,671	5,113.42	0.30	17	0.34	0.22 +/- 0.19	11.09 +/- 9.67	0.011
NPTF02101AB	22-Jan-03	1050	SP-1	22-Jan-03	14	0.28	253,570	5,071.4	0.30	11	0.22	-0.06 +/- 0.20	-3.05 +/- 10.16	-0.003
NPTF02102AB	22-Jan-03	1050	SP-1	22-Jan-03	14	0.28	253,570	5,071.4	0.30	6	0.12	-0.16 +/- 0.18	-8.13 +/- 9.09	-0.008
NPTF02201AB	22-Jan-03	1050	SP-2	22-Jan-03	14	0.28	253,570	5,071.4	0.30	4	0.08	-0.2 +/- 0.17	-10.16 +/- 8.62	-0.010
NPT02701AB	24-Feb-03	1145	SP-1	4-Mar-03	3	0.06	256,765	5,135.3	0.30	6	0.12	0.06 +/- 0.12	3.01 +/- 6.02	0.003
NPT02702AB	24-Feb-03	1145	SP-1	4-Mar-03	3	0.06	256,765	5,135.3	0.30	22	0.44	0.38 +/- 0.20	19.07 +/- 10.04	0.019
NPT02801AB	25-Feb-03	1145	SP-2	5-Mar-03	5	0.1	251,707	5,034.14	0.29	13	0.26	0.16 +/- 0.17	8.19 +/- 8.69	0.008
NPT03402AB	10-Mar-03	1000	SP-2	8-Apr-03	17	0.34	251,790	5,035.8	0.29	7	0.14	-0.2 +/- 0.20	-10.24 +/- 10.03	-0.010
NPT03401AB	10-Mar-03	1000	SP-2	8-Apr-03	17	0.34	251,790	5,035.8	0.29	6	0.12	-0.22 +/- 0.19	-11.26 +/- 9.82	-0.011
NPT03301AB	10-Mar-03	1000	SP-1	9-Apr-03	6	0.12	252,287	5,045.74	0.29	2	0.04	-0.08 +/- 0.11	-4.09 +/- 5.78	-0.004
NPT03901AB	14-Apr-03	1000	SP-1	17-Jun-03	4	0.08	257,754	5,155.08	0.30	32	0.64	0.56 +/- 0.24	27.99 +/- 12.00	0.028
NPT03902AB	14-Apr-03	1000	SP-1	17-Jun-03	4	0.08	257,754	5,155.08	0.30	10	0.2	0.12 +/- 0.15	6.00 +/- 7.48	0.006
NPT04001AB	14-Apr-03	1000	SP-2	17-Jun-03	4	0.08	257,754	5,155.08	0.30	20	0.4	0.32 +/- 0.20	16.00 +/- 9.80	0.016
NPT04501AB	12-May-03	1230	SP-1	17-Jun-03	4	0.08	257,754	5,155.08	0.30	12	0.24	0.16 +/- 0.16	8.00 +/- 8.00	0.008
NPT04601AB	12-May-03	1230	SP-2	18-Jun-03	5	0.1	252,863	5,057.26	0.29	17	0.34	0.24 +/- 0.19	12.23 +/- 9.56	0.012
NPT04602AB	12-May-03	1230	SP-2	18-Jun-03	5	0.1	252,863	5,057.26	0.29	78	1.56	1.46 +/- 0.36	74.40 +/- 18.57	0.074
NPT05201AB	16-Jun-03	1000	SP-2	18-Jun-03	5	0.1	252,863	5,057.26	0.29	8	0.16	0.06 +/- 0.14	3.06 +/- 7.35	0.003
NPT05202AB	16-Jun-03	1000	SP-2	18-Jun-03	5	0.1	252,863	5,057.26	0.29	12	0.24	0.14 +/- 0.16	7.13 +/- 8.40	0.007
NPT05101AB	16-Jun-03	1000	SP-1	18-Jun-03	5	0.1	252,863	5,057.26	0.29	60	1.2	1.1 +/- 0.32	56.05 +/- 16.43	0.056
NPT05801AB	21-Jul-03	1030	SP-2	28-Jul-03	1	0.02	255,197	5,103.94	0.30	16	0.32	0.3 +/- 0.16	15.15 +/- 8.33	0.015

Table C-4. (continued).

Sample Identifier	Sample Collection Date	Sample Collection Time	Sample Location	Alpha Count Date	Total Background Counts	Background (cpm)	Total Source Counts	Source (cpm)	Efficiency Factor (cpm/dpm)	Total Sample Counts	Sample (cpm)	Net Sample Activity or Net Count Rate (cpm)	Gross Alpha (pCi/L)	Sample Activity (pCi)
NPT05702AB	21-Jul-03	1030	SP-1	28-Jul-03	1	0.02	255,197	5,103.94	0.30	15	0.3	0.28 +/- 0.16	14.14 +/- 8.08	0.014
NPT05701AB	21-Jul-03	1030	SP-1	29-Jul-03	6	0.12	248,676	4,973.52	0.29	46	0.92	0.8 +/- 0.29	41.45 +/- 14.95	0.041
NPT06301AB	25-Aug-03	1000	SP-1	16-Sep-03	34	0.68	255,004	5,100.08	0.30	64	1.28	0.6 +/- 0.40	30.32 +/- 20.01	0.030
NPT06401AB	25-Aug-03	1000	SP-2	17-Sep-03	36	0.72	255,558	5,111.16	0.30	39	0.78	0.06 +/- 0.35	3.03 +/- 17.47	0.003
NPT06402AB	25-Aug-03	1000	SP-2	17-Sep-03	36	0.72	25,5558	5,111.16	0.30	33	0.66	-0.06 +/- 0.33	-3.03 +/- 16.75	-0.003
NPT06901AB	23-Sep-03	1030	SP-1	30-Sep-03	10	0.2	98,332	1,966.64	0.11	79	1.58	1.38 +/- 0.38	180.85 +/- 49.45	0.181
NPT07001AB	23-Sep-03	1030	SP-2	30-Sep-03	10	0.2	98,332	1,966.64	0.11	9	0.18	-0.02 +/- 0.17	-2.62 +/- 22.85	-0.003
NPT07002AB	23-Sep-03	1030	SP-2	30-Sep-03	10	0.2	98,332	1,966.64	0.11	19	0.38	0.18 +/- 0.22	23.59 +/- 28.23	0.024

cpm = counts per minute
dpm = disintegrations per minute

Table C-5. New Pump and Treat Facility volatile organic compound air effluent data.

SP-3-A-311

Sample Identifier	Date	Time	PCE (ppb [v/v])	Flag	TCE (ppb [v/v])	Flag	*cis*-DCE (ppb [v/v])	Flag	*trans*-DCE (ppb [v/v])	Flag	VC (ppb [v/v])	Flag
NPT00301VT	10/08/02	1000	30		540		50		14		7.6	U
NPT01001VT	11/20/02	845	19		340		36		10		7.5	U
NPT01701VT	12/12/02	1045	21		280		32		8.6		7.4	U
NPT02301VT[1]	01/22/03	1050	35	J	420		31		9	J	15	U
NPT02901VT	02/24/03	1145	37		440		28		8	J	15	UJ
NPT03501VT	03/10/03	1000	12		550	D	48		16		2.0	U
NPT04101VT	04/14/03	1000	32		490		37		12		2.0	U
NPT04701VT	05/12/03	1230	49		640		51		19		1.0	U
NPT05301VT	06/16/03	1000	40		600		45		15		1.0	U
NPT05901VT	07/21/03	1030	38		270	D	39		13		2.0	U
NPT06501VT	08/25/03	1000	26		350		27		9	J	16.0	U
NPT07101VT	09/23/03	1030	25		380	D	21		6		2.0	U

SP-4-A-310

Sample Identifier	Date	Time	PCE (ppb [v/v])	Flag	TCE (ppb [v/v])	Flag	*cis*-DCE (ppb [v/v])	Flag	*trans*-DCE (ppb [v/v])	Flag	VC (ppb [v/v])	Flag
NPT00401VT	10/08/02	1000	32		560		50		15		7.4	U
NPT01101VT	11/20/02	845	21		380		38		11		7.4	U
NPT01801VT	12/12/02	1045	19		270		29		8		7.4	U
NPT02401VT	01/22/03	1050	35		450		34		10	J	14.0	U
NPT03001VT	02/24/03	1145	31		380		24		15	UJ	15.0	UJ
NPT03601VT	03/10/03	1000	40		600	D	43		15		2.0	U
NPT04201VT	04/14/03	1000	25		350		28		9		2.0	U
NPT04801VT	05/12/03	1230	32		430		34		12		1.0	U
NPT05401VT	06/16/03	1000	25		380		28		9		1.0	U
NPT06001VT	07/21/03	1030	31		240	D	32		11		2.0	U
NPT06601VT	08/25/03	1000	25		330		26		8	J	16.0	U
NPT07201VT	09/23/03	1030	12		190	D	10		3		2.0	U

DCE = dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride

D = diluted sample
U = nondetect (half the detection limit is graphed)
J = estimated value

Table C-6. New Pump and Treat Facility volatile organic compound water effluent data.

SP-2 Total Effluent												
			PCE		TCE		*trans*-DCE		*cis*-DCE		VC	
Sample Identifier	Date	Time	(µg/L)	Flag	(µg/L)	Flag	(µg/L)	Flag	(µg/L)	Flag	(µg/L)	Flag
NPT02201AZ	01/22/03	1050	1	U	1		1	U	1	U	1	U
NPT02801AZ	02/24/03	1145	1	U	0.5	J	1	U	1	U	1	U
NPT03401AV	03/10/03	1000	1	UJ	0.4	J	1	U	1	U	1	U
NPT03402AV	03/10/03	1000	1	U	0.3	J	1	U	1	U	1	U
NPT04001AZ	04/14/03	1000	1	UJ	1		1	U	1	U	1	U
NPT04601AV	05/12/03	1230	1	UJ	1	U	1	U	1	U	1	U
NPT04602AV	05/12/03	1230	1	UJ	1	U	1	U	1	U	1	U
NPT05201AV	06/16/03	1510	1	U	1	U	1	U	1	U	1	U
NPT05202AV	06/16/03	1510	1	U	1	U	1	U	1	U	1	U
NPT05801AZ	07/21/03	1030	1	U	0.9	J	1	U	1	U	1	U
NPT06401AV	08/25/03	1000	1	U	0.3	J	1	U	1	U	1	U
NPT06402AV	08/25/03	1000	1	U	0.3	J	1	U	1	U	1	U
NPT07001AV	09/23/03	1030	1	U	1	U	1	U	1	U	1	U
NPT07002AV	09/23/03	1030	1	U	1	U	1	U	1	U	1	U
SP-7-A-310, Effluent												
NPT00101VA	10/08/02	1000	2	U	2	U	2	U	2	U	1	U
NPT00102VA	10/08/02	1000	2	U	2	U	2	U	2	U	1	U
NPT00801AV	11/20/02	845	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ
NPT00802AV	11/20/02	845	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ
NPT01501AZ	12/12/02	1046	1	U	1	U	1	U	1	U	1	U
SP-8-A-310, Effluent												
NPTG5101VE	09/18/02	845	1	U	1	U	1	U	1	U	1	U
NPT00201VE	10/08/02	1000	2	U	2	U	2	U	2	U	1	U
NPT00901AV	11/20/02	845	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ
NPT01601AV	12/12/02	1046	1	U	1	U	1	U	1	U	1	U
NPT01602AV	12/12/02	1046	1	U	1	U	1	U	1	U	1	U

DCE = dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene
VC = Vinyl Chloride

D = diluted sample
J = estimated value
U = nondetect (half the detection limit is graphed)

Table C-7. New Pump and Treat Facility tritium effluent data.

Sample Identifier	Date	Time	(pCi/L)	+/-	Minimum Detectable Amount
SP-2, Total Effluent					
NPT02201R8	01/22/03	1050	2,220	143	382
NPT02801R8	02/24/03	1145	2,760	176	463
NPT03401R8	03/10/03	1000	2,290	121	286
NPT03402R8	03/10/03	1000	2,020	121	298
NPT04001R8	04/14/03	1000	1,990	105	194
NPT04601R8	05/12/03	1230	2,060	121	295
NPT04602R8	05/12/03	1230	2,260	122	287
NPT05202R8	06/16/03	1000	2,160	181	390
NPT05201R8	06/06/03	1000	1,980	172	377
NPT05801R8	07/21/03	1030	1,890	179	383
NPT06401R8	08/25/03	1000	2,320	190	389
NPT06402R8	08/25/03	1000	2,550	196	388
NPT07001R8	09/23/03	1030	2,530	173	319
NPT07002R8	09/23/03	1030	2,650	177	321
SP-7-A-310, Effluent					
NPT00101R8	10/08/02	1000	2,610	172	293
NPT00102R8	10/08/02	1000	2,690	177	301
NPT00801R8	11/20/02	845	2,340	174	334
NPT00802R8	11/20/02	845	2,540	181	336
NPT01501R8	10/10/02	1045	2,720	121	269
SP-8-A-310, Effluent					
NPT00201R8	10/08/02	1000	2,940	189	316
NPT00901R8	11/20/02	845	2,620	181	332
NPT01601R8	12/12/02	1045	2,570	118	268
NPT01602R9	12/12/02	1045	2,630	124	284
NPTG5101R8	09/18/02	845	2,610	139	338

Table C-8. New Pump and Treat Facility strontium-90 effluent data.

Sample Identifier	Date	Time	(pCi/L)	Flag	+/-	Minimum Detectable Limit
SP-2, Total Effluent						
NPT02201RB	01/22/03	1050	0.0607	U	0.182	0.611
NPT02801RB	02/24/03	1145	-0.0082	U	0.123	0.425
NPT03402RB	03/10/03	1000	0.248	U	0.164	0.690
NPT03401RB	03/10/03	1000	0.275	UJ	0.135	0.506
NPT04001RB	04/14/03	1000	-0.213	U	0.128	0.658
NPT04601RB	05/12/03	1230	0.238	U	0.171	0.716
NPT04602RB	05/12/03	1230	0.0194	U	0.182	0.816
NPT05201RB	06/16/03	1000	0.205	U	0.127	0.468
NPT05202RB	06/16/03	1000	0.142	U	0.0877	0.325
NPT05801RB	07/21/03	1030	0.416	UJ	0.166	0.610
NPT06401RB	08/25/03	1000	0.182		0.159	0.588
NPT06402RB	08/25/03	1000	0.140		0.0893	0.319
NPT07001RB	09/23/03	1030	0.0617	U	0.0407	0.162
NPT07002RB	09/23/03	1030	0.0287	U	0.0397	0.165
SP-7-A-310, Effluent						
NPT00101RB	10/8/02	1000	-0.0291	U	0.123	0.625
NPT00102RB	10/8/02	1000	0.237	U	0.138	0.561
NPT01501RB	10/10/02	1045	0.236	U	0.118	0.486
NPT00801RB	11/20/02	845	0.262	UJ	0.121	0.424
NPT00802RB	11/20/02	845	0.376	UJ	0.138	0.501
SP-8-A-310, Effluent						
NPT00201RB	10/08/02	1000	0.188	U	0.134	0.579
NPT00901RB	11/20/02	845	0.224	UJ	0.105	0.413
NPT01601RB	12/12/02	1045	0.612		0.186	0.655
NPT01602RB	12/12/02	1045	0.308	UJ	0.137	0.544
NPTG5101RB	09/18/02	845	0.0268		0.134	0.582

J = estimated value
U = nondetect

Table C-9. New Pump and Treat Facility gross beta influent (SP-1) and effluent (SP-2, SP-7, and SP-8) data.

Sample Identifier	Sample Collection Date	Sample Collection Time	Sample Location	Beta Count Date	Total Background Counts	Background (cpm)	Total Source Counts	Source (cpm)	Efficiency Factor (cpm/dpm)	Total Sample Counts	Sample (cpm)	Net Sample Activity or Net Count Rate (cpm)	Gross Beta (pCi/L)	Sample Activity (pCi)
NPT00001AB	8-Oct-02	1000	SP-1-NPTF	5-Nov-02	1,582	31.64	111,357	2,227.14	0.201072	1,554	31.08	-0.56 +/- 2.24	-41.78 +/- 167.10	-0.042
NPT00201AB	8-Oct-02	1000	SP-8-A-310	5-Nov-02	1,582	31.64	111,357	2,227.14	0.201072	1,608	32.16	0.52 +/- 2.26	38.79 +/- 168.54	0.039
NPT00801AB	20-Nov-02	845	SP-7-A-311	20-Nov-02	1,514	30.28	111,280	2,225.6	0.201055	1,495	29.9	-0.38 +/- 2.19	-28.35 +/- 163.70	-0.028
NPT00802AB	20-Nov-02	845	SP-7-A-311	20-Nov-02	1,514	30.28	111,280	2,225.6	0.201055	1,544	30.88	0.6 +/- 2.21	44.76 +/- 165.03	0.045
NPT00901AB	20-Nov-02	845	SP-8-A-310	20-Nov-02	1,514	30.28	111,280	2,225.6	0.201055	1,500	30	-0.28 +/- 2.20	-20.89 +/- 163.84	-0.021
NPT00701AB	20-Nov-02	845	SP-1-NPTF	20-Nov-02	1,514	30.28	111,280	2,225.6	0.201055	1,597	31.94	1.66 +/- 2.23	123.85 +/- 166.45	0.124
NPT01401AB	12-Dec-02	1045	SP-1-NPTF	12-Dec-02	1,596	31.92	109,471	2,189.42	0.197591	1,603	32.06	0.14 +/- 2.26	10.63 +/- 171.75	0.011
NPT01501AB	12-Dec-02	1045	SP-7-A-311	12-Dec-02	1,596	31.92	109,471	2,189.42	0.197591	1,642	32.84	0.92 +/- 2.28	69.84 +/- 172.79	0.070
NPT016101AB	12-Dec-02	1046	SP-8-A-310	17-Dec-02	1,673	33.46	110,773	2,215.46	0.199835	1,754	35.08	1.62 +/- 2.34	121.60 +/- 175.77	0.122
NPT01602AB	12-Dec-02	1046	SP-8-A-310	17-Dec-02	1,673	33.46	110,773	2,215.46	0.199835	1,706	34.12	0.66 +/- 2.33	49.54 +/- 174.53	0.050
NPTF02101AB	22-Jan-03	1050	SP-1-NPTF	22-Jan-03	1,630	32.6	108,928	2,178.56	0.196534	1,544	30.88	-1.72 +/- 2.25	-131.27 +/- 172.00	-0.131
NPTF02102AB	22-Jan-03	1050	SP-1-NPTF	22-Jan-03	1,630	32.6	108,928	2,178.56	0.196534	1,641	32.82	0.22 +/- 2.29	16.79 +/- 174.60	0.017
NPTF02201AB	22-Jan-03	1050	SP-2-NPTF	22-Jan-03	1,630	32.6	108,928	2,178.56	0.196534	1,623	32.46	-0.14 +/- 2.28	-10.69 +/- 174.12	-0.011
NPT02701AB	24-Feb-03	1145	SP-1-NPTF	4-Mar-03	1,687	33.74	109,479	2,189.58	0.197439	1,659	33.18	-0.56 +/- 2.31	-42.54 +/- 175.78	-0.043
NPT02702AB	24-Feb-03	1145	SP-1-NPTF	4-Mar-03	1,687	33.74	109,479	2,189.58	0.197439	1,639	32.78	-0.96 +/- 2.31	-72.93 +/- 175.26	-0.073
NPT02801AB	25-Feb-03	1145	SP-2-NPTF	5-Mar-03	1,584	31.68	110,494	2,209.88	0.199487	1,709	34.18	2.5 +/- 2.30	187.98 +/- 172.60	0.188
NPT03402AB	10-Mar-03	1000	SP-2-NPTF	8-Apr-03	1,498	29.96	109,219	2,184.38	0.197309	1,552	31.04	1.08 +/- 2.21	82.10 +/- 167.94	0.082
NPT03401AB	10-Mar-03	1000	SP-2-NPTF	9-Apr-03	1,545	30.9	109,729	2,194.58	0.198157	1,520	30.4	-0.5 +/- 2.21	-37.85 +/- 167.63	-0.038
NPT03301AB	10-Mar-03	1000	SP-1-NPTF	8-Apr-03	1,498	29.96	109,219	2,184.38	0.197309	1,590	31.8	1.84 +/- 2.22	139.88 +/- 168.98	0.140
NPT03901AB	14-Apr-03	1000	SP-1-NPTF	17-Jun-03	1,466	29.32	109,761	2,195.22	0.198361	1,497	29.94	0.62 +/- 2.18	46.88 +/- 164.65	0.047
NPT03902AB	14-Apr-03	1000	SP-1-NPTF	17-Jun-03	1,466	29.32	109,761	2,195.22	0.198361	1,431	28.62	-0.7 +/- 2.15	-52.93 +/- 162.81	-0.053
NPT04001AB	14-Apr-03	1000	SP-2-NPTF	17-Jun-03	1,466	29.32	109,761	2,195.22	0.198361	1,489	29.78	0.46 +/- 2.17	34.79 +/- 164.43	0.035
NPT04501AB	12-May-03	1230	SP-1-NPTF	17-Jun-03	1,466	29.32	109,761	2,195.22	0.198361	1,470	29.4	0.08 +/- 2.17	6.05 +/- 163.90	0.006
NPT04601AB	12-May-03	1230	SP-2-NPTF	18-Jun-03	1,489	29.78	109,730	2,194.6	0.198262	1,543	30.86	1.08 +/- 2.20	81.71 +/- 166.64	0.082
NPT04602AB	12-May-03	1230	SP-2-NPTF	18-Jun-03	1,489	29.78	109,730	2,194.6	0.198262	1,499	29.98	0.2 +/- 2.19	15.13 +/- 165.43	0.015
NPT05201AB	16-Jun-03	1000	SP-2-NPTF	18-Jun-03	1,489	29.78	109,730	2,194.6	0.198262	1,623	32.46	2.68 +/- 2.23	202.76 +/- 168.82	0.203
NPT05202AB	16-Jun-03	1000	SP-2-NPTF	18-Jun-03	1,489	29.78	109,730	2,194.6	0.198262	1,528	30.56	0.78 +/- 2.20	59.01 +/- 166.23	0.059
NPT05101AB	16-Jun-03	1000	SP-1-NPTF	18-Jun-03	1,489	29.78	109,730	2,194.6	0.198262	1,634	32.68	2.9 +/- 2.24	219.41 +/- 169.12	0.219
NPT05801AB	21-Jul-03	1030	SP-2-NPTF	28-Jul-03	1,446	28.92	108,971	2,179.42	0.19695	1,437	28.74	-0.18 +/- 2.15	-13.71 +/- 163.58	-0.014
NPT05702AB	21-Jul-03	1030	SP-1-NPTF	28-Jul-03	1,446	28.92	108,971	2,179.42	0.19695	1,544	30.88	1.96 +/- 2.19	149.28 +/- 166.58	0.149
NPT05701AB	21-Jul-03	1030	SP-1-NPTF	29-Jul-03	1,417	28.34	108,827	2,176.54	0.19674	1,556	31.12	2.78 +/- 2.18	211.96 +/- 166.29	0.212
NPT06301AB	25-Aug-03	1000	SP-1-NPTF	16-Sep-03	1,647	32.94	108,268	2,165.36	0.195294	1,624	32.48	-0.46 +/- 2.29	-35.33 +/- 175.71	-0.035
NPT06401AB	8/25/2003	1000	SP-2-NPTF	17-Sep-03	1,582	31.64	108,573	2,171.46	0.195972	1,490	29.8	-1.84 +/- 2.22	-140.84 +/- 169.69	-0.141
NPT06402AB	8/25/2003	1000	SP-2-NPTF	17-Sep-03	1,582	31.64	108,573	2,171.46	0.195972	1,588	31.76	0.12 +/- 2.25	9.18 +/- 172.38	0.009
NPT06901AB	23-Sep-03	1030	SP-1-NPTF	30-Sep-03	1,589	31.78	108,656	2,173.12	0.196111	1,511	30.22	-1.56 +/- 2.23	-119.32 +/- 170.34	-0.119
NPT07001AB	23-Sep-03	1030	SP-2-NPTF	30-Sep-03	1,589	31.78	108,656	2,173.12	0.196111	1,540	30.8	-0.98 +/- 2.24	-74.96 +/- 171.14	-0.075
NPT07002AB	23-Sep-03	1030	SP-2-NPTF	30-Sep-03	1,589	31.78	108,656	2,173.12	0.196111	1,544	30.88	-0.9 +/- 2.24	-68.84 +/- 171.25	-0.069
NPT10101AB	21-Oct-03	930	SP-2-NPTF	11-Nov-03	1,537	30.74	108,293	2,165.86	0.195542	1,510	30.2	-0.54 +/- 2.21	-41.42 +/- 169.37	-0.041

Table C-9. (continued).

Sample Identifier	Sample Collection Date	Sample Collection Time	Sample Location	Beta Count Date	Total Background Counts	Background (cpm)	Total Source Counts	Source (cpm)	Efficiency Factor (cpm/dpm)	Total Sample Counts	Sample (cpm)	Net Sample Activity or Net Count Rate (cpm)	Gross Beta (pCi/L)	Sample Activity (pCi)
NPT10102AB	21-Oct-03	930	SP-2-NPTF	11-Nov-03	1,537	30.74	108,293	2,165.86	0.195542	1,541	30.82	0.08 +/- 2.22	6.14 +/- 170.23	0.006
NPT10001AB	21-Oct-03	930	SP-1-NPTF	11-Nov-03	1,537	30.74	108,293	2,165.86	0.195542	1,559	31.18	0.44 +/- 2.23	33.75 +/- 170.73	0.034
NPT10601AB	4-Nov-03	1040	SP-1-NPTF	11-Nov-03	1,537	30.74	108,293	2,165.86	0.195542	1,612	32.24	1.5 +/- 2.24	115.06 +/- 172.19	0.115
NPT10701AB	4-Nov-03	1040	SP-2-NPTF	11-Nov-03	1,537	30.74	108,293	2,165.86	0.195542	1,473	29.46	-1.28 +/- 2.19	-98.19 +/- 168.34	-0.098
NPT10702AB	4-Nov-03	1040	SP-2-NPTF	11-Nov-03	1,537	30.74	108,293	2,165.86	0.195542	1,431	28.62	-2.12 +/- 2.18	-162.63 +/- 167.16	-0.163

cpm = counts per minute
dpm = disintegrations per minute

Appendix D

Water Quality Data for Wells TAN-29, -33, -36, -43, and -44

Appendix D

Water Quality Data for Wells TAN-29, -33, -36, -43, and -44

Water quality data for wells TAN-29, -33, -36, -43, and -44 are shown in Tables D-1 and D-2.

Table D-1. Volatile organic compound data at wells TAN-29, -33, -36, -43, and -44.

Well	Date	PCE (µg/L)	Flag	TCE (µg/L)	Flag	*cis*-1,2- DCE (µg/L)	Flag	*trans*-1,2- DCE (µg/L)	Flag	VC (µg/L)	Flag
TAN-29	12/9/02	10	J	640		130		100		< 50	U
	03/3/03	6.9	J	565		104		76.2		< 20	U
	07/28/03	13.5		945	E	125		71.7		< 20	U
	07/28/03	13.3		940	E	154		93.2		2.7	
	09/16/03	12.9		974	E	170		115		3.7	
TAN-33	12/11/02	12		120		5.5		2.2	J	< 10	U
	03/5/03	15.7		156		5.4		2		< 2	U
	07/30/03	12		130		4.3		1.5		< 2	U
	09/17/03	11.8		122		4.4		1.6		< 2	U
TAN-36	12/11/02	5.0		61		3.5		1.9	J	< 4	U
	03/3/03[a]	4.8		73.2		2.9		1	J	< 2	U
	03/3/03[a]	4.5		68.5		2.8		1.1	J	< 2	U
	07/28/03	5.0		74.2		2.4		1	J	< 2	U
	09/15/03	4.9		68.7		2.4		0.9	J	< 2	U
TAN-43	12/11/02	6.5		85		5.1		2.2	J	< 5	U
	12/11/02	6.8		84		4.9		2.1	J	< 5	U
	03/5/03	5.2		76.4		2.9		1.2	J	< 2	U
	07/30/03	4.6		67.8		2.3		0.71	J	< 2	U
	09/17/03	4.7		67.1		2.4		0.8	J	< 2	U
TAN-44	12/11/02	16		150		6.8	J	2.8	J	< 20	
	03/5/03	11.1		126		4.9		1.9	J	< 2	U
	07/30/03	8.9		111		4.4		1.3	J	< 2	U
	09/17/03	8.8		107		4.3		1.5	J	< 2	U
	09/17/03	8.6		109		4.5		1.5	J	< 2	U

a. Duplicate sample.

Table D-2. Radiological data at wells TAN-29, -33, -36, -43, and -44.

		H-3		Sr-90			Gross Alpha		Gross Beta	
Well	Date	(pCi/L)	+/-	(pCi/L)	+/-	Minimum Detectable Activity	(pCi/L)	+/-	(pCi/L)	+/-
TAN-29	12/9/02	3,530	114	51.1	5.7		16.23	9.07	121.76	169.7
	3/3/03	3,030	190	51.7	5.6		6.14	8.19	138	171.73
	7/28/03	3,320	136	42.2	5.67		11.40	9.94	190.61	165.89
	7/28/03	3,520	149	37.9	4.7		41.45	14.95	163.16	165.39
	9/16/03	3,220	207	49.5	6.32		9.08	18.15	188.29	175.53
TAN-33	12/11/02	3,110	110	0.49	0.122	0.371	37.67	15.37	10.63	171.75
	3/5/03	2,550	176	-0.211	0.065	0.226	-5.15	6.14	53.22	167.42
	7/30/03	2,950	144	-0.581	0.188	0.641	9.18	10.20	-54.23	170.39
	9/17/03	2,400	186	-0.0727	0.0984	0.527	28.27	23.02	71.75	165.17
TAN-36	12/11/02	3,270	112	0.102	0.062	0.244	32.5	15.7	-114.8	174.1
	3/3/03[a]	2,830	184	-0.216	0.199	0.69	29.12	11.88	-54.7	175.57
	3/3/03[a]	2,550	177	-0.148	0.073	0.262	14.05	9.98	-57.74	175.52
	7/28/03	2,660	131	0.383	0.162	0.615	17.62	11.16	103.69	164.29
	9/15/03	2,550	177	0.148	0.0981	0.407	10.09	18.27	-113.09	169.90
TAN-43	12/11/02	3,350	113	0.265	0.061	0.183	-1.02	10.55	-164.68	173.19
	12/11/02	3,330	113	0.252	0.054	0.151	-7.11	9.31	-122.38	173.92
	3/5/03	2,310	167	1.84	1.05	3.37	11.24	9.8	25.74	168.77
	7/30/03	2,980	139	0.055	1.48	0.686	10.11	17.85	-35.33	175.71
	9/17/03	2,310	182	0.0895	0.133	0.607	-7.07	19.68	105.32	165.79
TAN-44	12/11/02	3,320	113	0.196	0.059	0.192	12.19	12.85	-274.98	174.25
	3/5/03	2,880	184	-0.0901	0.0798	0.278	1.02	7.37	49.96	169.21
	7/30/03	3,090	142	-0.0493	0.138	0.662	46.92	16.06	-113.11	169.32
	9/17/03	2,500	184	0.257	0.132	0.517	-15.14	18.83	155.71	166.72
	9/17/03	2,430	185	0.0139	0.11	0.536	1.01	20.49	116.02	165.99

a. Duplicate sample.